

I. Project Title:

Yampa River Basin Endangered Fish Recovery and Water Management Plan

II. Principal Investigator:

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III. Project Summary:

The objectives of the Yampa Plan are to provide water for existing and foreseeable future human needs in the Yampa River Basin and protect instream flows and aquatic habitat necessary to maintain and recover endangered fishes and protect other native fish and wildlife resources in the Yampa River Basin.

The original strategy was to meet these objectives by evaluating a variety of stream flow augmentation strategies within the framework of the National Environmental Policy Act (NEPA) review process. A contractor was hired to handle NEPA document preparation and public involvement. However, a high level of discomfort with this approach arose from the absence of a well-defined action with a clear federal nexus. This situation was further exacerbated by opposition within the Recovery Program to construct a reservoir specifically to augment flows for fish. Such a reservoir had been proposed in 1995, but was rejected for economic and environmental reasons. Moreover, there was a perception that the Yampa River Basin, for better or worse, was being treated differently from the other subbasins of the Upper Colorado River. Therefore, to achieve some measure of equity between the different subbasins, the Program decided to follow a path similar to that of the Colorado River mainstem upstream from Grand Junction, Colorado, the so-called "15-mile reach," for which a programmatic biological opinion was recently completed pursuant to Section 7 of the Endangered Species Act (ESA).

In June 1999, the Yampa River Coordinator completed the FY 2000 umbrella scope of work (SOW) for the Yampa Operation and Management Plan reflecting the recent change in strategy. Tasks and task numbers were changed in the SOW for FY 2000, which are reflected in this report.

In October 1998, Modde, Miller and Anderson met with the peer review panel, members of the Yampa Project Management Team, and other interested parties to discuss comments on their August draft report entitled *Determination of habitat availability and habitat use of endangered fishes in the yampa river during baseflow period between August and October*. Following revision, a second draft was submitted to the Biology Committee in December 1998 for its review. After a second revision, the final report was published in April 1999.

Ayres drafted a report early in July 1999 synthesizing the results of several earlier studies, including Modde et al. (1999), BBC (1998), Hydrosphere (1995) and numerous other biological and hydrological studies of the Yampa River Basin. The Yampa Project Management Team revised this initial draft and posted its revision on the Colorado River listserv at the end of July. In August 1999, the Yampa River Coordinator convened a conference in Craig, Colorado, consisting of research personnel, the Project Management Team, representatives from state and federal agencies and environmental organizations, local stakeholders and the interested public. The purpose of the conference was to solicit comments on the draft synthesis report and identify any significant issues that must be resolved prior to or through the development of a management plan for the Yampa Basin.

Following the conference, the synthesis report was revised pursuant to comments received at the conference, as well as to written comments submitted in response to the draft report. A second draft was posted at the end of September 1999. The contract with Ayres was closed out following its completion of the second draft. The Yampa River Coordinator and Project Management Team finalized the report in November 1999.

A workgroup consisting of representatives from state and federal agencies, environmental organizations and local stakeholders was assembled to develop a management plan for the Yampa River Basin. The plan would serve as the basis for an intra-Service Section 7 consultation resulting in a programmatic biological opinion (PBO) for the Basin. The federal nexus for the PBO would be a Cooperative Agreement between the FWS and the states of Colorado and Wyoming to implement the plan.

A Water Subcommittee of the larger workgroup was formed to address some of the technical issues concerning depletions and the augmentation needs of the fishes. This group's role was expanded during the process of developing the management plan to address other issues on an *ad hoc* basis. The subcommittee identified and evaluated a host of alternatives to be presented to the larger workgroup and from which a proposed action would be selected.

A plan was drafted, submitted to the workgroup for review and comment and revised prior to August 2000, when the workgroup met in Craig, Colorado, to hammer out the details of the plan with the assistance of a facilitator. That 2-day meeting produced a consensus as to a specific proposed action. However, unresolved issues remain as to the increment of future depletions that the plan should encompass.

IV. Study Schedule:

- a. Initial year: 1996
- b. Final year: 2001

V. Relationship to RIPRAP:

Green River Action Plan: Yampa and Little Snake Rivers  
I.A.4.a.(3) Yampa River management plan

VI. Accomplishment of FY 2000 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Task 1. Endangered Fish Flow Needs Assessment: Subsequent to its acceptance of flow recommendations of Modde et al. (1999) for their August–October study period, the FWS identified a need to modify winter flow recommendations of Modde and Smith (1995) to be consistent with the approach taken by Modde et al. Due to uncertainties concerning the winter flow needs of the fishes, a group of FWS biologists and hydrologists agreed to add 33% buffer to the 93 cfs August–October recommended flow, resulting in a revised November–February recommended flow of 124 cfs. Furthermore, they agreed to extend these flow recommendations to include base flow periods during transitional months (March and July) by applying the base flow recommendation for the adjacent base flow months (124 cfs and 93 cfs, respectively). The FWS drafted a modification to its earlier flow recommendations; this modification will be finalized in FY 2001.

Task 2. Update population and water use projections: There has been further discussion as to the increment of future depletions to be included in the management plan and PBO. Modeling with the Colorado Decision Support System (CDSS) determined that average annual depletions would reach 151 KAF in Colorado by 2045, representing an increase of 28 KAF over a current baseline of 123 KAF. However, water users in Colorado seek to secure an increment of 50 KAF for future development. There will be further analysis and discussion in FY 2001 to resolve this issue. In addition, Wyoming developed its estimate of future depletions, 66 KAF, which represents an increase of 31 KAF over its 35 KAF baseline. The Colorado Water Conservation Board (CWCB) will work with the Wyoming SEO to blend these two data sets into a single model for the Yampa River Basin to evaluate the cumulative impacts of depletions basin-wide.

Task 3. Section 7 Consultation Process: No work was completed or funded in FY 2000.

Task 4. Instream flow issues and flow scenarios: In FY 2000, the CWCB expanded its CDSS period of record for the Yampa River from 17 years (water-years 1975–1991) to 90 years (water-years 1909–1998) and further refined the model. The CDSS provided information necessary to assess stream flow augmentation needs and evaluate a variety of alternatives to meet those needs and their potential impacts on State Parks at Steamboat Lake, Elkhead and Stagecoach reservoirs.



Task 5. Identify and describe preliminary alternatives: The Yampa River Coordinator developed a practical approach for augmenting late summer flows for the endangered fishes, based on the flow recommendations described above under Task 1 of this project. This augmentation protocol operates like a thermostat with set points or thresholds above and below the summer/winter flow recommendations (93 cfs/124 cfs). When flows in the Yampa River fall below a lower threshold, augmentation would begin and continue until an upper threshold is reached, at which point augmentation would cease until river flows reach the lower threshold again. A number of different thresholds and reservoir release rates were evaluated to assess their ability to satisfy the flow recommendations and to determine the volume of augmentation required. This analysis concluded that 7,000 AF of augmentation, including an allowance of 1,000 AF for transit losses, would satisfy the flow needs of the fishes in 90% of the “augmentation-years”, and partially satisfy those needs in the other 10% of those years. An “augmentation-year” is defined as a 9-month period following spring runoff and preceding the following spring runoff (July–March).

Eleven augmentation water supply alternatives were identified that use a single source or combination of sources to provide a total of 7,000 AF of augmentation. These sources include Steamboat Lake, Stagecoach Reservoir, Elkhead Reservoir, supply interruption contracts with water users, and new tributary reservoir(s).

Task 6. Evaluate alternatives. Prepare/publish Yampa Management Plan: The 11 water supply alternatives were evaluated for their hydrologic capacity to satisfy augmentation needs and for the potential impacts of operating these sources in a manner consistent with the proposed augmentation protocol. In particular, impacts to reservoir levels was of great concern to Colorado State Parks, which manages facilities at all three reservoirs.

The Yampa River Coordinator drafted a management plan for the Yampa River with direction from and review and comment by other members of the workgroup. The plan was revised and submitted to the workgroup for review prior to a facilitated conference held in Craig, Colorado, in August 2000. Participants at this 2-day conference included members of the Yampa River PBO workgroup and other concerned stakeholders, who produced a consensus as to a proposed action for water supply to meet the needs of both fish and people. The consensus of that meeting will dictate the content of the final draft plan to be completed in FY 2001. The consensus proposal would derive 7,000 AF from a combination of sources: Steamboat Lake (2,000 AF) and Elkhead Reservoir enlargement (3,700 AF) with the balance (1,300 AF) to be derived from a lease by or through the CRWCD. The CRWCD also will evaluate an additional enlargement of Elkhead to serve human needs. This enlargement is not expected to exceed 4,300 AF (8,000 AF total).

The workgroup also agreed to continue a program of nonnative fish management by the FWS and CDOW to include both lethal removal of channel catfish from Dinosaur National Monument and non-lethal translocation of northern pike and other nonnative predators from the reach upstream from DNM. The CDOW developed a SOW for FY 2001 to identify potential northern pike spawning sites in the Yampa River and develop measures to exclude adult pike from these areas to reduce pike reproduction in the river.



Tasks 7. Determine NEPA and ESA requirements.: Under the NEPA, the FWS, as the federal action agency, will prepare a programmatic environmental assessment (EA) for management plan. The EA will determine whether or not a programmatic environmental impact statement (EIS) will be required for the plan. Individual actions proposed by the plan, such as enlargement of Elkhead Reservoir, will undergo a separate NEPA processes to satisfy project permit requirements (e.g., CWA Section 404). In addition, the FWS will initiate intra-Service consultation for its proposed action pursuant to Section 7 of the ESA, the product of which will be a programmatic biological opinion similar to that of the 15-mile reach.

Tasks 8. Final Yampa Management Plan and Implementation Agreement: The CWCB developed a draft Cooperative Agreement between the FWS and states of Colorado and Wyoming. The agreement does not contain a recapitulation of the plan, but rather spells out the roles of the signatory parties in its implementation. Workgroup members and the solicitor for the USDI submitted comments. Discussion ensued as to which agencies or individuals from each of the states was the appropriate signatory to the agreement and whether other parties should be invited to participate officially. While Colorado and Wyoming will have a critical role in plan implementation, individual water users may enter into separate “recovery agreements” with the FWS to ensure their actions are covered under the management plan and PBO.

Task 9. Public Involvement: Activities included issuing press releases, advertizing public meetings in local newspapers, preparing for and conducting public meetings and making presentations at regular meetings of the Yampa River Basin Partnership. A more detailed report on this Public Involvement Plan was prepared and submitted for PIP-3.

Task 10. Hydrology support: The CWCB continued to provide hydrology support, using the CDSS hydrologic model (see also Tasks 2 and 4 above) .

Task 11. Stream flow and sediment gages: Separate project reports are appended.

Task 12. Aquatic Wildlife Management Plan: CDOW and CSU removed about 400 northern pike from the Yampa River between Craig and DNM and translocated them to Rio Blanco Reservoir in the White River Basin, where they were subject to harvest by anglers. This project was accomplished in conjunction with surveys for Colorado pikeminnow. Rio Blanco was selected over Elkhead or the State Wildlife Area ponds near Hayden, because of the lower risk of escapement from Rio Blanco. Local anglers prefer that receiving waters closer to the Yampa River be used in the future. The CDOW will consider translocating pike to Elkhead on an interim basis, until a fish barrier is installed. A FY 2001 SOW was developed for Ayres Associates to evaluate the feasibility and cost of such a barrier at Elkhead.

Task 13. Program Management: The Yampa River Coordinator arranged a number of meetings, including a facilitated meeting in Craig, presented progress reports to the BC, MC and IC, as appropriate, provided guidance to the CWCB in designing CDSS Yampa

River model runs, and developed protocol for augmenting stream flows and a post-CDSS data analysis tool to estimate augmentation volumes necessary to satisfy instream flow requirements based on that protocol. He also prepared FY 1999 annual reports and FY 2001 scopes of work, and coordinated with research personnel and the Yampa River workgroup to produce a management plan for the Yampa River.

VII. Recommendations:

A management plan for the Yampa River is vital to the recovery of listed fish species while providing certainty to water users that their needs will be met in the future. A meaningful agreement with water users is needed to protect instream flows and aquatic habitat for native fisheries in the future, based on the flow recommendations contained in *Determination of habitat availability and habitat use of endangered fishes in the yampa river during baseflow period between August and October* (Modde et al. 1999) and the projected future depletions from the Yampa River contained in the *Yampa Valley water demand study* (BBC 1998) as modeled by the CDSS. This project provides a framework by which to develop a management plan to meet these dual objectives.

VIII. Project Status:

Activities under Tasks 1 and 2 were funded out of Task 13 or by the individual agencies involved. Task 3 was not funded. Task 4 was funding out of Tasks 10 and 13. Activities under Task 5 were funded out of Task 13 or by the individual agencies involved. Tasks 6 and 7 were funded out of Task 13. CDSS modeling under Task 10 was funded out of the FY 1998 budget. Task 12 was funded by the State of Colorado. Task 11 was funded at \$66,000 and Task 13 at \$84,000.

IX. FY 2000 Budget Status: Budget figures provided by BR may differ from those in the FY 2000 SOW. Both sets of figures are included below.

A. Funds Provided:	<u>Per BR</u>	<u>Per SOW</u>
Task 1:	\$ 0	\$ 0
Task 2:	\$ 0	\$ 0
Task 3:	\$ 0	\$ 0
Task 4:	\$ 0	\$ 0 (funded from Tasks 10 and 13)
Task 5:	\$ 0	\$ 0 (funded from Task 13)
Task 6:	\$ 0	\$ 0 (funded from Task 13)
Task 7:	\$ 0	\$ 0 (funded from Task 13)
Task 8:	\$ 0	\$ 0
Task 9:	\$ 0	\$ 0 (funded from Task 13)
Task 10:	\$ 0	\$ 0 (FY 1998 in-kind funds)
Task 11:	\$ ?	\$ 66,000
Task 12:	\$ 0	\$ 0
Task 13:	<u>\$ ?</u>	<u>\$ 84,000</u>
Total	\$ ?	\$150,000

B.	Funds Expended:	<u>Per BR</u>	<u>Per SOW</u>
	Task 1:	\$ 0	NA
	Task 2:	\$ 0	NA
	Task 3:	\$ 0	NA
	Task 4:	\$ 0	NA
	Task 5:	\$ 0	NA
	Task 6:	\$ 0	NA
	Task 7:	\$ 0	NA
	Task 8:	\$ 0	NA
	Task 9:	\$ 0	NA
	Task 10:	\$ 0	NA
	Task 11:	\$ 0	NA
	Task 12:	\$ ?	NA
	Task 13:	<u>\$ ?</u>	NA
	Total	\$ ?	NA

C.	Difference:	<u>Per BR</u> [surplus or deficit (\$)]
	Task 1:	\$ 0
	Task 2:	\$ 0
	Task 3:	\$ 0
	Task 4:	\$ 0
	Task 5:	\$ 0
	Task 6:	\$ 0
	Task 7:	\$ 0
	Task 8:	\$ 0
	Task 9:	\$ 0
	Task 10:	\$ 0
	Task 11:	\$ 0
	Task 12:	\$ ?
	Task 13:	<u>\$ ?</u>
	Total	\$ ?

D.	Percent of the FY 2000 work completed, and projected costs to complete:		
	Task 1:	100%	FY 2001 costs, if any, to be borne by Task 13
	Task 2:	100%	FY 2001 costs, if any, to be borne by Task 13
	Task 4:	100%	FY 2001 costs, if any, to be borne by Task 10
	Task 5:	100%	Completed
	Task 6:	100%	Completed
	Task 7:	100%	FY 2001 costs to be borne by Task 13
	Task 8:	100%	FY 2001 costs to be borne by Task 13
	Task 9:	100%	FY 2001 costs to be borne by Task 13
	Task 10:	100%	No additional funds required in FY 2001
	Task 11:	100%	\$10K projected in FY 2001
	Task 12:	100%	No additional funds required in FY 2001
	Task 13:	100%	\$87K projected in FY 2001

- E. Recovery Program funds spent for publication charges: None
- X. Status of Data Submission: Not applicable.
- XI. Signed: Gerry Roehm                      December 8, 2000  
Principal Investigator                      Date